

WHAT IS CLAIMED IS:

1. A system, comprising:
an application;
5 a temporal volume configured to store temporal data; and
a temporal volume manager configured to:
receive an I/O request from the application, wherein the I/O request
specifies one or more timestamps for temporal data on the
temporal volume; and
10 perform a logical device-level temporal operation on the temporal volume
in response to the I/O request.
2. The system as recited in claim 1, wherein the I/O request is a write request, and
wherein, in said temporal operation, the temporal volume manager is further configured
15 to write temporal data specified by the I/O request to the temporal volume.
3. The system as recited in claim 2, wherein, in said temporal operation, the
temporal volume manager is further configured to generate a checkpoint of the temporal
data on the temporal volume corresponding to a timestamp specified by the I/O request.
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4. The system as recited in claim 1, wherein the I/O request is a read request, and
wherein, in said temporal operation, the temporal volume manager is further configured
to return temporal data specified by the I/O request to the application.
- 25 5. The system as recited in claim 1, wherein the I/O request specifies that a
checkpoint of the temporal volume is to be created corresponding to a timestamp
specified by the I/O request, and wherein, in said temporal operation, the temporal
volume manager is further configured to generate the checkpoint of the temporal volume
corresponding to the specified timestamp.

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6. The system as recited in claim 1, wherein the temporal volume manager is further configured to generate checkpoints of the temporal volume at a time interval specified by an I/O request.

5 7. The system as recited in claim 1, wherein the I/O request specifies that a point-in-time image of the temporal volume is to be created corresponding to a timestamp specified by the I/O request, and wherein, in said temporal operation, the temporal volume manager is further configured to generate the point-in-time image of the temporal volume corresponding to the specified timestamp.

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8. The system as recited in claim 1, wherein the I/O request specifies that a slice-in-time image of the temporal volume specified by two timestamps in the I/O request is to be created, and wherein, in said temporal operation, the temporal volume manager is further configured to generate the slice-in-time image of the temporal volume specified
15 by the two timestamps.

9. The system as recited in claim 1, wherein the I/O request specifies that a history of the temporal volume is to be truncated at a point in time specified by the I/O request, and wherein, in said temporal operation, the temporal volume manager is further configured
20 to truncate the history of the temporal volume at the point in time specified by the I/O request.

10. The system as recited in claim 1, wherein the I/O request specifies that a history of the temporal volume is to be traversed to a point in time specified by the I/O request, and
25 wherein the temporal volume manager is further configured to perform the temporal operation at the point in time in the history of the temporal volume specified by the I/O request.

11. The system as recited in claim 1, wherein the I/O request indicates one or more
30 regions of the temporal volume on which the temporal operation is to be performed.

12. A system, comprising:
means for receiving an I/O request for a temporal volume from an application,
wherein the I/O request specifies one or more timestamps for temporal
5 data on a temporal volume; and
means for performing a logical device-level temporal operation on the temporal
volume in response to the I/O request.
13. A method, comprising:
10 a temporal volume manager receiving an I/O request from an application, wherein
the I/O request specifies one or more timestamps for temporal data on a
temporal volume; and
the temporal volume manager performing a logical device-level temporal
operation on the temporal volume in response to the I/O request.
- 15 14. The method as recited in claim 13, wherein the I/O request is a write request, and
wherein said performing a logical device-level temporal operation on the temporal
volume comprises the temporal volume manager writing temporal data specified by the
I/O request to the temporal volume.
- 20 15. The method as recited in claim 14, wherein said performing a logical device-level
temporal operation on the temporal volume further comprises generating a checkpoint of
the temporal data on the temporal volume corresponding to a timestamp specified by the
I/O request.
- 25 16. The method as recited in claim 13, wherein the I/O request is a read request, and
wherein said performing a logical device-level temporal operation on the temporal
volume comprises returning temporal data specified by the I/O request to the application.
- 30 17. The method as recited in claim 13, wherein the I/O request specifies that a

checkpoint of the temporal volume is to be created corresponding to a timestamp specified by the I/O request, and wherein said performing a logical device-level temporal operation on the temporal volume comprises generating the checkpoint of the temporal volume corresponding to the specified timestamp.

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18. The method as recited in claim 13, further comprising the temporal volume manager generating checkpoints of the temporal volume at a time interval specified by an I/O request.

10 19. The method as recited in claim 13, wherein the I/O request specifies that a point-in-time image of the temporal volume is to be created corresponding to a timestamp specified by the I/O request, and wherein said performing a logical device-level temporal operation on the temporal volume comprises generating the point-in-time image of the temporal volume corresponding to the specified timestamp.

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20. The method as recited in claim 13, wherein the I/O request specifies that a slice-in-time image of the temporal volume specified by two timestamps in the I/O request is to be created, and wherein said performing a logical device-level temporal operation on the temporal volume comprises generating the slice-in-time image of the temporal volume
20 specified by the two timestamps.

21. The method as recited in claim 13, wherein the I/O request specifies that a history of the temporal volume is to be truncated at a point in time specified by the I/O request, and wherein said performing a logical device-level temporal operation on the temporal
25 volume comprises truncating the history of the temporal volume at the point in time specified by the I/O request.

22. The method as recited in claim 13, wherein the I/O request specifies that a history of the temporal volume is to be traversed to a point in time specified by the I/O request,
30 and wherein said performing a logical device-level temporal operation on the temporal

volume comprises performing the temporal operation at the point in time in the history of the temporal volume specified by the I/O request.

23. The method as recited in claim 13, further comprising performing the logical device-level temporal operation on one or more regions of the temporal volume indicated by the I/O request.

24. A computer-accessible medium comprising program instructions, wherein the program instructions are configured to implement:

10 a temporal volume manager receiving an I/O request from an application, wherein the I/O request specifies one or more timestamps for temporal data on a temporal volume; and

the temporal volume manager performing a logical device-level temporal operation on the temporal volume in response to the I/O request.

15 25. The computer-accessible medium as recited in claim 24, wherein the I/O request is a write request, and wherein, in said performing a logical device-level temporal operation on the temporal volume, the program instructions are further configured to implement the temporal volume manager writing temporal data specified by the I/O request to the temporal volume.

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26. The computer-accessible medium as recited in claim 25, wherein, in said performing a logical device-level temporal operation on the temporal volume, the program instructions are further configured to implement generating a checkpoint of the temporal data on the temporal volume corresponding to a timestamp specified by the I/O request.

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27. The computer-accessible medium as recited in claim 24, wherein the I/O request is a read request, and wherein, in said performing a logical device-level temporal operation on the temporal volume, the program instructions are further configured to

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implement returning temporal data specified by the I/O request to the application.

28. The computer-accessible medium as recited in claim 24, wherein the I/O request specifies that a checkpoint of the temporal volume is to be created corresponding to a timestamp specified by the I/O request, and wherein, in said performing a logical device-level temporal operation on the temporal volume, the program instructions are further configured to implement generating the checkpoint of the temporal volume corresponding to the specified timestamp.

29. The computer-accessible medium as recited in claim 24, wherein the program instructions are further configured to implement the temporal volume manager generating checkpoints of the temporal volume at a time interval specified by an I/O request.

30. The computer-accessible medium as recited in claim 24, wherein the I/O request specifies that a point-in-time image of the temporal volume is to be created corresponding to a timestamp specified by the I/O request, and wherein, in said performing a logical device-level temporal operation on the temporal volume, the program instructions are further configured to implement generating the point-in-time image of the temporal volume corresponding to the specified timestamp.

31. The computer-accessible medium as recited in claim 24, wherein the I/O request specifies that a slice-in-time image of the temporal volume specified by two timestamps in the I/O request is to be created, and wherein, in said performing a logical device-level temporal operation on the temporal volume, the program instructions are further configured to implement generating the slice-in-time image of the temporal volume specified by the two timestamps.

32. The computer-accessible medium as recited in claim 24, wherein the I/O request specifies that a history of the temporal volume is to be truncated at a point in time specified by the I/O request, and wherein, in said performing a logical device-level

temporal operation on the temporal volume, the program instructions are further configured to implement truncating the history of the temporal volume at the point in time specified by the I/O request.

- 5 33. The computer-accessible medium as recited in claim 24, wherein the I/O request specifies that a history of the temporal volume is to be traversed to a point in time specified by the I/O request, and wherein, in said performing a logical device-level temporal operation on the temporal volume, the program instructions are further configured to implement performing the temporal operation at the point in time in the
10 history of the temporal volume specified by the I/O request.

34. The computer-accessible medium as recited in claim 24, wherein the program instructions are further configured to implement performing the logical device-level temporal operation on one or more regions of the temporal volume indicated by the I/O
15 request.